

## § 1610.6

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The purpose of the metal plate or “template” on the carriage of the brushing device is to support the specimen during the brushing operation. The template shall be 3.2 mm (0.13 in) thick. See Figure 9 of this part.

[73 FR 15640, Mar. 25, 2008, as amended at 73 FR 62187, Oct. 20, 2008]

### § 1610.6 Test procedure.

The test procedure is divided into two steps. Step 1 is testing in the original state; Step 2 is testing after the fabric has been refurbished according to paragraph (b)(1) of this section.

#### (a) Step 1—Testing in the original state.

(1) Tests shall be conducted on the fabric in a form or state ready for use in wearing apparel. Determine whether the fabric to be tested is a plain surface textile fabric or a raised surface textile fabric as defined in § 1610.2 (k) and (l). There are some fabrics that require extra attention when preparing test specimens because of their particular construction characteristics. Examples of these fabrics are provided in paragraphs (a)(1)(i) through (vi) of this section along with guidelines for preparing specimens from these fabrics. This information is not intended to be all-inclusive.

(i) *Flocked fabrics.* Fabrics that are flocked overall are treated as raised surface textile fabrics as defined in § 1610.2(l). Flock printed fabrics (usually in a pattern and not covering the entire surface) shall be treated as plain surface textile fabrics as defined in § 1610.2(k).

(ii) *Cut velvet fabrics.* Cut velvet fabrics with a patterned construction shall be considered a raised surface textile fabric as defined in § 1610.2(l).

(iii) *Metallic thread fabrics.* Metallic thread fabrics shall be considered plain surface textile fabrics provided the base fabric is smooth. The specimens shall be cut so that the metallic thread is parallel to the long dimension of the specimen and arranged so the test flame impinges on a metallic thread.

(iv) *Embroidery.* Embroidery on netting material shall be tested with two sets of preliminary specimens to determine the most flammable area (which offers the greatest amount of netting or embroidery in the 150 mm (6 in.) direction). One set of netting only shall

be tested and the other set shall consist mainly of embroidery with the specimens cut so that the test flame impinges on the embroidered area. Test the most flammable area according to the plain surface textile fabric requirements. The full test shall be completed on a sample cut from the area that has the fastest burn rate.

(v) *Burn-out patterns.* Flat woven constructions with burn-out patterns shall be considered plain surface textile fabrics as defined in § 1610.2(k).

(vi) *Narrow fabrics and loose fibrous materials.* Narrow fabrics and loose fibrous materials manufactured less than 50 mm (2 in) in width in either direction shall not be tested. If a 50 mm by 150 mm (2 in by 6 in) specimen cannot be cut due to the nature of the item, *i.e.* hula skirts, leis, fringe, loose feathers, wigs, hairpieces, etc., do not conduct a test.

#### (2) Plain surface textile fabrics:

(i) *Preliminary trials.* Conduct preliminary trials to determine the quickest burning direction. The specimen size shall be 50 mm by 150 mm (2 in by 6 in). Cut one specimen from each direction of the fabric. Identify the fabric direction being careful not to make any identifying marks in the exposed area to be tested. Preliminary specimens shall be mounted and conditioned as described in paragraphs (a)(2)(ii) through (iv) of this section and then tested following the procedure in paragraph (c) of this section to determine if there is a difference in the burning characteristics with respect to the direction of the fabric.

(ii) *Identify and cut test specimens.* Cut the required number of test specimens to be tested (refer to § 1610.7(b)(1)). Each specimen shall be 50 mm by 150 mm (2 in by 6 in), with the long dimension in the direction in which burning is most rapid as established in the preliminary trials. Be careful not to make any identifying marks in the exposed area to be tested.

(iii) *Mount specimens.* Specimens shall be placed in the holders, with the side to be burned face up. Even though plain surface textile fabrics are not brushed, all specimens shall be mounted in a specimen holder placed on the carriage that rides on the brushing device to ensure proper position in the

holder. A specimen shall be placed between the two metal plates of a specimen holder and clamped. Each specimen shall be mounted and clamped prior to conditioning and testing.

(iv) *Condition specimens.* All specimens mounted in the holders shall then be placed in a horizontal position on an open metal shelf in the oven to permit free circulation of air around them. The specimens shall be dried in the oven for  $30 \pm 2$  minutes at  $105^\circ \pm 3^\circ \text{C}$  ( $221^\circ \pm 5^\circ \text{F}$ ), removed from the oven and placed over a bed of anhydrous silica gel desiccant in a desiccator until cool, but not less than 15 minutes.

(v) *Flammability test.* Follow the test procedure in paragraph (c) of this section and also follow the test sequence in § 1610.7(b)(1).

(3) *Raised surface textile fabrics*—(i) Preliminary trials. The most flammable surface of the fabric shall be tested. Conduct preliminary trials and/or visual examination to determine the quickest burning area. The specimen size shall be 50 mm by 150 mm (2 in by 6 in). For raised surface textile fabrics, the direction of the lay of the surface fibers shall be parallel with the long dimension of the specimen. Specimens shall be taken from that part of the raised-fiber surface that appears to have the fastest burn time. For those fabrics where it may be difficult to visually determine the correct direction of the lay of the raised surface fibers, preliminary tests can be done to determine the direction of the fastest burn time. For textiles with varying depths of pile, tufting, etc., the preliminary test specimens are taken from each depth of pile area to determine which exhibits the quickest rate of burning. A sufficient number of preliminary specimens shall be tested to provide adequate assurance that the raised surface textile fabric will be tested in the quickest burning area. Preliminary specimens shall be mounted and conditioned as described below and tested following the procedure in paragraph (c) of this section.

(ii) *Identify and cut test specimens.* Cut the required number of specimens (refer to § 1610.7(b)(3)) to be tested. Each specimen shall be 50 mm by 150 mm (2 in by 6 in), with the specimen taken from the direction in which

burning is most rapid as established in the preliminary trials and/or visual examination. Be careful not to make any identifying marks in the exposed area to be tested.

(iii) *Mount specimens.* Prior to mounting the specimen, run a fingernail along the 150 mm (6 in) edge of the fabric not more than 6.4 mm (0.25 in) in from the side to determine the lay of the surface fibers. All specimens shall be mounted in a specimen holder placed on the carriage that rides on the brushing device. The specimens shall be mounted with the side to be burned face up and positioned so the lay of the surface fibers is going away from the closed end of the specimen holder. The specimen must be positioned in this manner so that the brushing procedure described in paragraph (a)(3)(iv) of this section will raise the surface fibers, i.e., the specimen is brushed against the direction of the lay of the surface fibers. The specimen shall be placed between the two metal plates of the specimen holder and clamped.

(iv) *Brush specimens.* After mounting in the specimen holder (and with the holder still on the carriage that rides on the brushing device) each specimen shall be brushed one time. The carriage is pushed to the rear of the brushing device, see Figure 7, and the brush, see Figure 8, lowered to the face of the specimen. The carriage shall be drawn forward by hand once against the lay of the surface fibers at a uniform rate. Brushing of a specimen shall be performed with the specimen mounted in a specimen holder. The purpose of the metal plate or “template” on the carriage of the brushing device is to support the specimen during the brushing operation. See Figure 9.

(v) *Condition specimens.* All specimens (mounted and brushed) in the holders shall be then placed in a horizontal position on an open metal shelf in the oven to permit free circulation of air around them. The specimens shall be dried in the oven for  $30 \pm 2$  minutes at  $105^\circ \pm 3^\circ \text{C}$  ( $221^\circ \pm 5^\circ \text{F}$ ) removed from the oven and placed over a bed of anhydrous silica gel desiccant in a desiccator until cool, but not less than 15 minutes.

(vi) *Conduct flammability test.* Follow the procedure in paragraph (c) of this

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section and follow the test sequence in § 1610.7(b)(3).

(b) *Step 2—Refurbishing and testing after refurbishing.*

(1) The refurbishing procedures are the same for both plain surface textile fabrics and raised fiber surface textile fabrics. Those samples that result in a Class 3, Rapid and Intense Burning after Step 1 testing in the original state shall not be refurbished and shall not undergo Step 2.

(i) *Dry cleaning procedure.* (A) All samples shall be dry cleaned before they undergo the laundering procedure. Samples shall be dry cleaned in a commercial dry cleaning machine, using the following prescribed conditions:

Solvent: Perchloroethylene, commercial grade

Detergent class: Cationic.

Cleaning time: 10–15 minutes.

Extraction time: 3 minutes.

Drying Temperature: 60–66 °C (140–150 °F).

Drying Time: 18–20 minutes.

Cool Down/Deodorization time: 5 minutes.

Samples shall be dry cleaned in a load that is 80% of the machine's capacity.

(B) If necessary, ballast consisting of clean textile pieces or garments, white or light in color and consisting of approximately 80% wool fabric pieces and 20% cotton fabric pieces, shall be used.

(ii) *Laundering procedure.* The sample, after being subjected to the dry cleaning procedure, shall be washed and dried one time in accordance with sections 8.2.2, 8.2.3 and 8.3.1(A) of AATCC Test Method 124–2006 “Appearance of Fabrics after Repeated Home Laundering” (incorporated by reference at § 1610.6(b)(1)(B)(iii)). Washing shall be performed in accordance with sections 8.2.2 and 8.2.3 of AATCC Test Method 124–2006 using AATCC 1993 Standard Reference Detergent, powder and wash water temperature (IV) ( $120^{\circ} \pm 5^{\circ}\text{F}$ ;  $49^{\circ} \pm 3^{\circ}\text{C}$ ) specified in Table II of that method, and the water level, agitator speed, washing time, spin speed and final spin cycle specified for “Normal/Cotton Sturdy” in Table III of that method. A maximum wash load shall be 8 pounds (3.63 kg) and may consist of any combination of test samples and dummy pieces. Drying shall be performed in accordance with section

8.3.1(A) of that test method, Tumble Dry, using the exhaust temperature ( $150^{\circ} \pm 10^{\circ}\text{F}$ ;  $66^{\circ} \pm 5^{\circ}\text{C}$ ) and cool down time of 10 minutes specified in the “Durable Press” conditions of Table IV.

(iii) AATCC Test Method 124–2006 “Appearance of Fabrics after Repeated Home Laundering,” is incorporated by reference. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy from the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, North Carolina 27709. You may inspect a copy at the Office of the Secretary, Consumer Product Safety Commission, Room 502, 4330 East West Highway, Bethesda, Maryland 20814 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

(2) *Testing plain surface textile fabrics after refurbishing.* The test procedure is the same as for Step 1—Testing in the original state described in paragraph (a)(1) of this section; also follow the test sequence § 1610.7(b)(2).

(3) *Testing raised fiber surface textile fabrics after refurbishing.* The test procedure is the same as for Step 1—Testing in the original state as described in paragraph (a)(3) of this section; also follow the test sequence in § 1610.7(b)(4).

(c) *Procedure for testing flammability.* (1) The test chamber shall be located under the hood (or other suitable enclosure) with the fan turned off. Open the control valve in the fuel supply. Allow approximately 5 minutes for the air to be drawn from the fuel line, ignite the gas and adjust the test flame to a length of 16 mm ( $\frac{5}{8}$  in), measured from its tip to the opening in the gas nozzle.

(2) Remove one mounted specimen from the desiccator at a time and place it in position on the specimen rack in the chamber of the apparatus. Thick fabrics may require adjustment of the specimen rack so that the tip of the indicator finger just touches the surface of the specimen.

(3) Adjust the position of the specimen rack of the flammability test chamber so that the tip of the indicator finger just touches the face of the mounted specimen.

(4) String the stop thread through the guides in the upper plate of the specimen holder across the top of the specimen, and through any other thread guide(s) of the chamber. Hook the stop weight in place close to and just below the stop weight thread guide. Set the timing mechanism to zero. Close the door of the flammability test chamber.

(5) Begin the test within 45 seconds of the time the specimen was removed from the desiccator. Activate the trigger device to impinge the test flame. The trigger device controls the impingement of the test flame onto the specimen and starts the timing device. The timing is automatic and stops when the weight is released by the severing of the stop thread.

(6) At the end of each test, turn on the hood fan to exhaust any fumes or smoke produced during the test.

(7) Record the burn time (reading of the timer) for each specimen, along with visual observation using the test result codes given in §1610.8. If there is no burn time, record the visual observation using the test result codes. Please note for raised-fiber surface textile fabrics, specimens should be allowed to continue burning, even though a burn rate is measured, to determine if the base fabric will fuse.

(8) After exhausting all fumes and smoke produced during the test, turn off the fan before testing the next specimen.

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#### **§ 1610.7 Test sequence and classification criteria.**

(a) *Preliminary and final classifications.* Preliminary classifications are assigned based on the test results both before and after refurbishing. The final classification shall be the preliminary classification before or after refurbishing, whichever is the more severe flammability classification.

(b) *Test sequence and classification criteria.* (1) Step 1, Plain Surface Textile Fabrics in the original state.

(i) Conduct preliminary tests in accordance with §1610.6(a)(2)(i) to determine the fastest burning direction of the fabric.

(ii) Prepare and test five specimens from the fastest burning direction. The burn times determine whether to assign the preliminary classification and proceed to §1610.6(b) or to test five additional specimens.

(iii) Assign the preliminary classification of Class 1, Normal Flammability and proceed to §1610.6(b) when:

(A) There are no burn times; or

(B) There is only one burn time and it is equal to or greater than 3.5 seconds; or

(C) The average burn time of two or more specimens is equal to or greater than 3.5 seconds.

(iv) Test five additional specimens when there is either only one burn time, and it is less than 3.5 seconds; or there is an average burn time of less than 3.5 seconds. Test these five additional specimens from the fastest burning direction as previously determined by the preliminary specimens. The burn times for the 10 specimens determine whether to:

(A) Stop testing and assign the final classification as Class 3, Rapid and Intense Burning only when there are two or more burn times with an average burn time of less than 3.5 seconds; or

(B) Assign the preliminary classification of Class 1, Normal Flammability and proceed to §1610.6(b) when there are two or more burn times with an average burn time of 3.5 seconds or greater.

(v) If there is only one burn time out of the 10 test specimens, the test is inconclusive. The fabric cannot be classified.

(2) Step 2, Plain Surface Textile Fabrics after refurbishing in accordance with §1610.6(b)(1).

(i) Conduct preliminary tests in accordance with §1610.6(a)(2)(i) to determine the fastest burning direction of the fabric.

(ii) Prepare and test five specimens from the fastest burning direction. The burn times determine whether to stop testing and assign the preliminary classification or to test five additional specimens.